

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Physical fitness in children and adolescents with inflammatory bowel disease: protocol for a case-control study
<b>AUTHORS</b>	Vanhelst, Jeremy; Beghin, Laurent; Coopman, Stéphanie; Labreuche, Julien; Djeddi, Djamal; Gottrand, Frederic; Turck, Dominique; Ley, Delphine

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Weidner, Jens Technische Universität Dresden, Medizinische Fakultät "Carl Gustav Carus" Health Sciences/ Public Health
<b>REVIEW RETURNED</b>	11-Apr-2022

<b>GENERAL COMMENTS</b>	<p>A well-formulated study protocol is available. The methodology and statistical analysis are logically structured and comprehensible.</p> <p>However, it seems questionable why the questionnaires are not used with the control group.</p> <p>The primary objective could be formulated more concretely</p> <p>Should it read "other than IBD" in page 9 line 15?</p> <p>Good luck for the realization of the study</p>
-------------------------	--

<b>REVIEWER</b>	Saidi, Oussama Université de Toulon - Campus de La Garde-La Valette-du-Var, laboratory Physical Activity impact on Health (IAPS)
<b>REVIEW RETURNED</b>	10-Jul-2022

<b>GENERAL COMMENTS</b>	<p>Very interesting study indeed. Assessing the physical fitness of children and adolescents with inflammatory bowel disease (IBD) is very relevant given the high and increasing prevalence of these diseases in youth. Congratulation and all my encouragement for the continuation of this work.</p> <p>I have, however, some questions and suggestions to enhance the manuscript.</p> <p><b>ABSTRACT</b></p> <p>- Page 2, line 11: Mentioning that "no study has assessed physical fitness in youth with IBD" is not necessary here. Although it's up to you, I rather prefer showing humility in your approach.</p> <p>Strengths and limitations of this study</p> <p>- Please specify "compared to healthy matched controls" in the first bullet point.</p>
-------------------------	---

	<p><b>INTRODUCTION</b></p> <ul style="list-style-type: none"> <li>- Please remove the headlines in the introduction.</li> <li>- The introduction could benefit from some details on: <ul style="list-style-type: none"> <li>o The pathological pathways of IBD (this should not be exhaustive either)</li> <li>o Page 4, line 52: Is there any previous data on how these diseases are related to physical activity level? Please build upon this point.</li> <li>o Please added your hypotheses at the end of the introduction.</li> </ul> </li> <li>- Ultimately, why would you think that youth with IBD would show a different physical fitness compared to their healthy counterparts? This need to be further argued to make the study questions meaningful to the reader.</li> </ul> <p><b>METHODS AND ANALYSIS</b></p> <ul style="list-style-type: none"> <li>- Page 6 to 8: please directly added the methods used (e.g., for body composition: skinfolds). This was detailed afterward but should be mentioned in the study design and setting section.</li> <li>- Page 8, line 6: why should patients undergo blood samples? In my opinion this should be explained here.</li> <li>- Page 11, line 23: Please bring further details on the accelerometry-based outcomes and their analysis method. What are the cut-off planned to be used? Are any measurements of sedentary behaviors or sleep planned within this study?</li> <li>- Page 12, lines 36 to 45: Please be advised that the paragraph on anthropometry measurements would be more suitably presented with body composition.</li> <li>- Page 13, line 47: Please define adverse events (AEs) and precise if this is related to the accelerometry wear or to the course of the disease.</li> <li>- Page 14, line 55: Why would you consider a decrease in cardiorespiratory fitness of 5 mL.kg.min<sup>-1</sup> in youths as a clinically relevant difference? Please provide a reference.</li> <li>- I suggest adding a limitation section at the end of the manuscript.</li> </ul>
--	--

## VERSION 1 – AUTHOR RESPONSE

Reviewer 1:

A well-formulated study protocol is available. The methodology and statistical analysis are logically structured and comprehensible. However, it seems questionable why the questionnaires are not used with the control group.

We decided not to use the questionnaire because data on questionnaires in healthy children are widely and well documented in literature. In addition, our primary objective is to compare physical fitness levels between IBD children and healthy children. Therefore, we decided to reduce tests for healthy children, more acceptable for youth and their parents.

The primary objective could be formulated more concretely.

Thank you for this remark. The sentence has been modified.

Should it read "other than IBD" in page 9 line 15?  
Sorry for this mistake. Change has been made.

Good luck for the realization of the study.  
Thank you.

Reviewer 2:

Very interesting study indeed. Assessing the physical fitness of children and adolescents with inflammatory bowel disease (IBD) is very relevant given the high and increasing prevalence of these diseases in youth. Congratulation and all my encouragement for the continuation of this work. I have, however, some questions and suggestions to enhance the manuscript.  
Thank you very much for your comments.

## ABSTRACT

- Page 2, line 11: Mentioning that "no study has assessed physical fitness in youth with IBD" is not necessary here. Although it's up to you, I rather prefer showing humility in your approach.  
Sentence has been removed.

## Strengths and limitations of this study

- Please specify "compared to healthy matched controls" in the first bullet point.  
Sentence has been modified according to your suggestion.

## INTRODUCTION

- Please remove the headlines in the introduction.  
The headlines in the introduction has been removed.

- The introduction could benefit from some details on:

- The pathological pathways of IBD (this should not be exhaustive either)

As suggested, sentence has been added in the introduction section.

- Page 4, line 52: Is there any previous data on how these diseases are related to physical activity level? Please build upon this point.

A point has been added in the introduction section (at the end) in order to justify the rational of the study and our objectives.

- Please added your hypotheses at the end of the introduction.

As requested, hypotheses have been added in the introduction section.

- Ultimately, why would you think that youth with IBD would show a different physical fitness compared to their healthy counterparts? This need to be further argued to make the study questions meaningful to the reader.

As requested, a paragraph has been added at the end of the introduction section.

## METHODS AND ANALYSIS

- Page 6 to 8: please directly added the methods used (e.g., for body composition: skinfolds). This was detailed afterward but should be mentioned in the study design and setting section.

As suggested, methods used have been added in this section.

- Page 8, line 6: why should patients undergo blood samples? In my opinion this should be explained here.

As suggested, the sentence has been developed.

- Page 11, line 23: Please bring further details on the accelerometry-based outcomes and their analysis method. What are the cut-off planned to be used? Are any measurements of sedentary behaviors or sleep planned within this study?

Thank you for your comment. The paragraph has been more developed.

- Page 12, lines 36 to 45: Please be advised that the paragraph on anthropometry measurements would be more suitably presented with body composition.

Thank you for this remark. The paragraph has been reworded.

- Page 13, line 47: Please define adverse events (AEs) and precise if this is related to the accelerometry wear or to the course of the disease.

Sentences have been modified and added.

- Page 14, line 55: Why would you consider a decrease in cardiorespiratory fitness of 5 mL.kg.min<sup>-1</sup> in youths as a clinically relevant difference? Please provide a reference.

Thank you for your comment. The reference has been added to justify 5 mL.kg.min<sup>-1</sup> compared to the mean found in healthy youth population.

- I suggest adding a limitation section at the end of the manuscript.

According to the guidelines of journal (BMJ open), limits of the study have to be noted in the "strengths and limitations of this study" with bullets points. We can see this section in page 3.

## VERSION 2 – REVIEW

<b>REVIEWER</b>	Weidner, Jens Technische Universität Dresden, Medizinische Fakultät "Carl Gustav Carus" Health Sciences/ Public Health
<b>REVIEW RETURNED</b>	25-Aug-2022

<b>GENERAL COMMENTS</b>	It is a well-designed and comprehensible study protocol. The study pursues a relevant and important aim in children and adolescents with IBD. The study is suitable to close research gaps. I wish you much success in conducting the study.
-------------------------	--

<b>REVIEWER</b>	Saidi, Oussama Université de Toulon - Campus de La Garde-La Valette-du-Var, laboratory Physical Activity impact on Health (IAPS)
<b>REVIEW RETURNED</b>	11-Aug-2022

<b>GENERAL COMMENTS</b>	Well done and good luck with the ongoing of this project.
-------------------------	---